

PATENT ABSTRACTS OF JAPAN

(11) Publication number : 10-017400

(43) Date of publication of application : 20.01.1998

(51) Int.Cl.

C30B 29/40
C30B 25/14
// H01L 21/205

BEST

(21) Application number : 08-171972

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(22) Date of filing : 02.07.1996

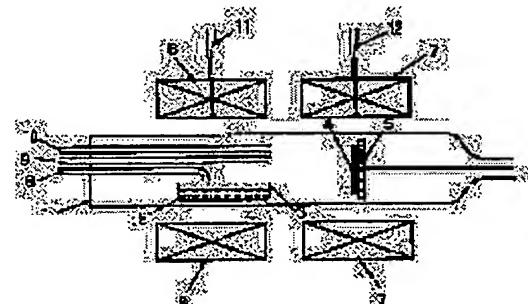
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(54) METHOD FOR MAGNESIUM-DOPED NITRIDE TYPE III-V GROUP COMPOUND SEMICONDUCTOR CRYSTAL

(57) Abstract:

PROBLEM TO BE SOLVED: To surely supply an organomagnesium compound onto a substrate without causing thermal decomposition of the compound and to enable doping of the substrate with a prescribed amount of Mg by specifying the raw materials of a group V element, a group III element and Mg at the time of performing vapor phase epitaxial growth of the semiconductor crystal with a hot-wall method.



SOLUTION: In this method, NH₃ or hydrazine, a gaseous mixture of HCl or gaseous chlorine and an organic compound of a group III element, or a gaseous halide of a group III element, and a gaseous organomagnesium compound are used as a group V element raw material, a group III element raw material, and an Mg raw material respectively and these raw materials are supplied onto a substrate in a reaction tube using a hot-wall method. For example, a gaseous mixture of HCl and H₂ is supplied through a nozzle 8 onto molten Ga 2 in a boat 3 placed in a high temp. region of a reaction tube 1 to allow Ga to react with HCl and to form gaseous GaCl and then, the formed gaseous GaCl are supplied onto a substrate 4. The gaseous GaCl is allowed to react with a gaseous mixture of NH₃ and bis(ethylcyclopentadienyl)Mg, which is supplied through a nozzle 10, to grow an Mg-doped GaN crystal on the substrate 4.

LEGAL STATUS

[Date of request for examination] 23.06.2003

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]

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